Water Temperature Protocol

Purpose

To measure the temperature of the water sample

Overview

The temperature of the water sample is needed for the dissolved oxygen and pH measurements, and for studies of global hydrology questions.

Time

5 minutes after the thermometer has been calibrated

Level

All

Frequency

Weekly

Calibration every three months

Key Concepts

Temperature, temperature measurement
Heat, heat transfer, conduction
Accuracy
Precision

Skills

Using a thermometer properly
Reading a scale
Recording data

Materials and Tools

Alcohol-filled thermometer
A clock or watch
Enough string to lower the thermometer into the water
Rubber band
Data sheets

Preparation

Bring the tools and materials to the Hydrology Study Site.

Prerequisites

None

Calibration and Quality Control

This measurement takes only a few minutes to complete. The main concern is to allow sufficient time for the thermometer to equilibrate to the temperature of the water perhaps three to five minutes.

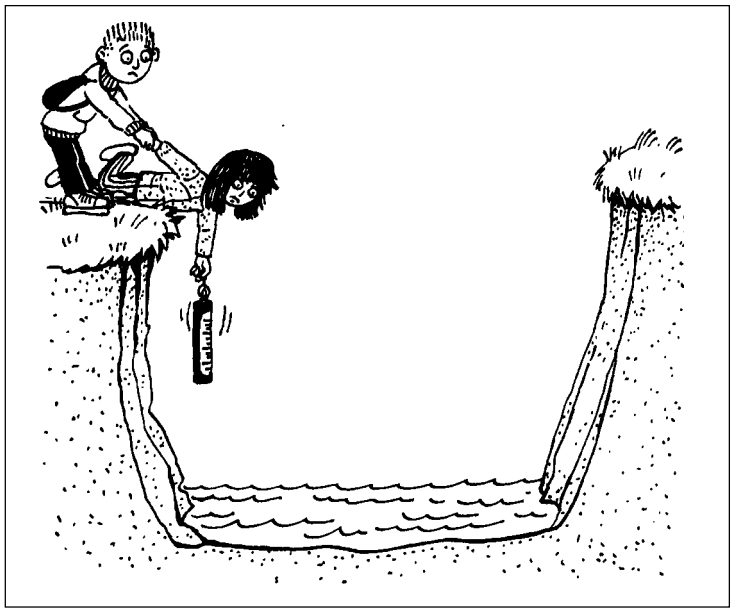
Your organic liquid-filled thermometer should be calibrated at least every three months as well as before its first use. Calibrate it following the instructions in the *Atmosphere Investigation Maximum, Minimum, and Current Temperatures Protocol.*

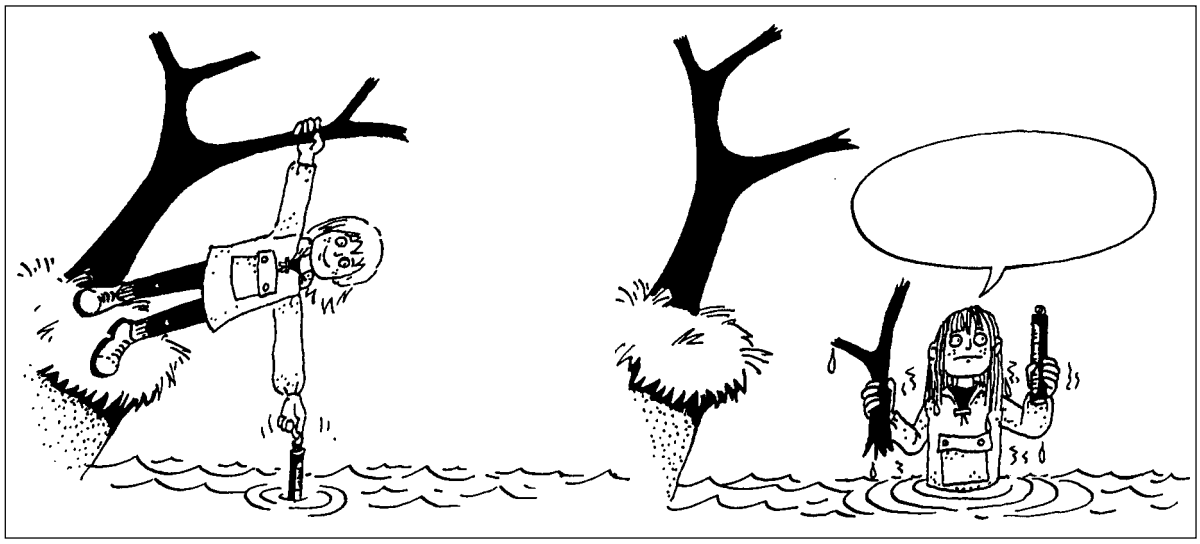
How to Measure Water Temperature

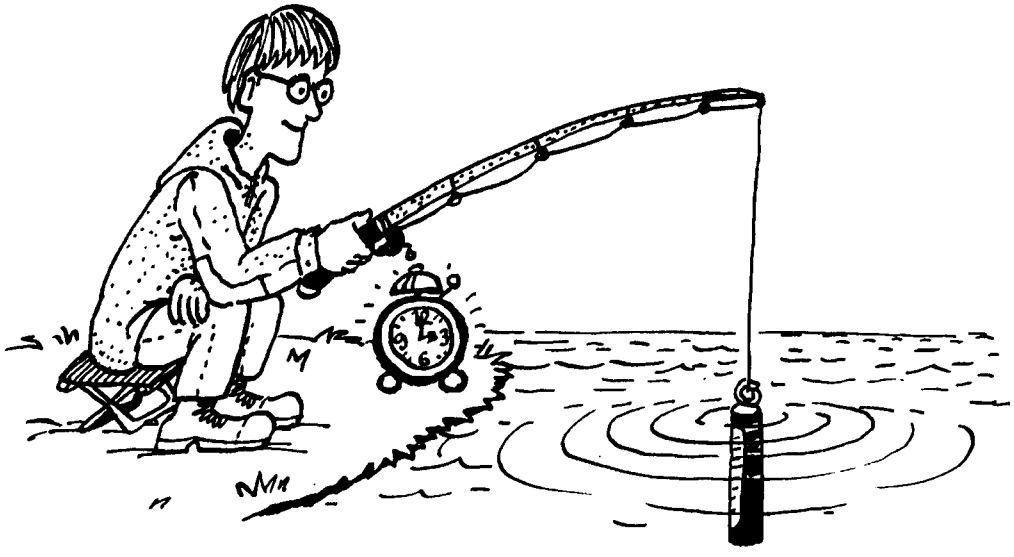
1. Tie one end of a piece of string securely to the end of the thermometer and the other end to a rubber band. Slip the rubber band around the wrist so that the thermometer is not lost if it is accidentally dropped in the water.
2. Hold the end of the thermometer (opposite the bulb) and shake it several times to remove any air in the enclosed liquid. Note the temperature reading.
3. Immerse the thermometer to a depth of 10 cm in the sample water for three to five minutes.
4. Raise the thermometer only as much as is necessary to read the temperature. Quickly note the temperature reading. If

the air temperature is significantly different from the water temperature or it is a windy day, the thermometer reading may change rapidly after it is removed from the water; try to take the reading while the bulb of the thermometer is still in the water. Lower the thermometer for another minute or until it stabilizes. Read it again. If the temperature is unchanged, proceed to Step 5.

5. Record this temperature along with the date and time on the Hydrology Investigation Data Work Sheet.
6. Take the average of the temperatures measured by the student groups. If all measured values are within 1.0° C of the average, submit the average value to the GLOBE Student Data Server. Otherwise, repeat the measurement.







Source: Jan Smolík, 1996, TEREZA, Association for Environmental Education, Czech Republic